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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/508,514	04/30/2002	Patrick Duwat	0384-0049-0 PCT	3030
22850	7590	11/14/2003	EXAMINER	
OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C.			MARX, IRENE	
1940 DUKE STREET			ART UNIT	
ALEXANDRIA, VA 22314			PAPER NUMBER	

1651

DATE MAILED: 11/14/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/508,514

Applicant(s)

DUWAT ET AL

Examiner

Irene Marx

Art Unit

1651

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 August 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 14-26 is/are pending in the application.
- 4a) Of the above claim(s) 24-26 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 14-23 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

The amendment filed 8/25/03 is acknowledged. Applicant's election with traverse of group I, claims 1-23 is noted.

The traversal is on the ground(s) that because the Office simply concluded that there is no technical relationship and did not present convincing reasons in support thereof, the restriction is improper.

However, contrary to applicant's contentions, Kaneko teaches a process of culturing lactic acid bacteria in a nutrient medium that contains at least one porphyrin compound. Even though the bacteria produced are not harvested during the process of culturing, there is no reason to conclude that the cells produced do not constitute or are not suitable as a "starter" culture. It appears that applicant considers a "starter culture" to be one or more bacterial strains having the desired characteristics for producing the final product. (Specification, page 1, paragraph 2 ; page 3, lines 30-35). Undoubtedly, the strain disclosed by Kaneko meets these requirements. See, also the rejections under 35 U.S.C § 102(b). The dependence of claims 24 and 25 on claim 14 is not dispositive of the issue of lack of unity, since as noted, the cells produced in the process of Kaneko constitute or are suitable as starter cultures. In addition, claims 24 and 25 depend not only on claim 14, but also on claims 15 to 23. In addition, starter cultures of lactic acid bacteria are old and well known in the art regardless of the process by which they are obtained.

Burden is not an issue in applications filed under 35 U.S.C § 371.

The claims as written are drawn to several inventions which are not linked by a special technical feature to form a single general inventive concept as is required for unity of invention.

Clearly different searches and issues are involved with each group.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 14-23 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 14 is confusing in the recitation "which contains at least one porphyrin compound is present or is added". Correction is required.

Claim 19 is vague and indefinite in the recitation "is equal to at least 5 ~~μ~~M"... Is it equal to 5 ~~μ~~M or does it contain at least 5 ~~μ~~M? No new matter may be added. Also the "whole duration" appears redundant. The antecedent basis for "the culture" is unclear. Similarly, it is unclear whether the "oxygen content" pertains to the culture medium or to the bacterial culture.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 14, 16, 17 and 21 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Keitel.

The claims are directed to a process of producing a starter culture of lactic acid bacteria by culturing aerobically in the presence of at least one porphyrin compound.

Keitel discloses the cultivation of lactic acid bacteria on a vegetable mash which contains chlorophyll, a porphyrin compound, and harvest the bacteria and use them to inoculate fodder.

Thus harvesting a starter culture. See, e.g., col. 1, lines 42-50 and col. 2, lines 5-18 and Example II.

Claims 14, 16, 17 and 21 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Heuser.

The claims are directed to a process of producing a starter culture of lactic acid bacteria by culturing aerobically in the presence of at least one porphyrin compound.

Heuser discloses the cultivation of lactic acid bacteria on vegetable waste which contains chlorophyll, a porphyrin compound, and harvest the bacteria and use them to inoculate silage. Thus harvesting a starter culture. See, e.g., page 1, col. 1, lines 30-45 and page 2, bridging paragraph between col. 1 and 2.

Claims 14, 16, 17 and 21 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Treschow *et al.*.

The claims are directed to a process of producing a starter culture of lactic acid bacteria by culturing aerobically in the presence of at least one porphyrin compound.

Treschow *et al.* discloses the cultivation of lactic acid bacteria on a vegetable mash such as silage which contains chlorophyll, a porphyrin compound, and harvest the bacteria and use them as an inoculant of a further fermentation. Thus harvesting a starter culture. See, e.g., col. bridging paragraph between col. 1 and 2. In addition, the reference discloses the cultivation of lactic acid bacteria on fish pulp which contains blood, a porphyrin containing compound, and harvesting of the bacteria and their use as an inoculant of a further fermentation, in this case of blood, a porphyrin containing compound. See, e.g., col. 2, lines 49-60. This food product also appears to contain recoverable lactic acid bacteria.

Claims 14, 16, 17 and 21 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by DE 2440516

The claims are directed to a process of producing a starter culture of lactic acid bacteria by culturing aerobically in the presence of at least one porphyrin compound.

DE 2440516 discloses the cultivation of *Lactobacillus bavaricus* on sauerkraut, which contains chlorophyll, a porphyrin compound, and harvesting of the bacteria and use them as an inoculant of a further fermentation. See, e.g., pages 14-15 and 18. Thus harvesting a starter culture. In addition, the reference discloses the cultivation of various lactic acid bacteria on

sauerkraut juice, which also contains chlorophyll, a porphyrin compound, and harvesting of 356 lactic acid producing cultures, which are all usable as inoculants of a further fermentation. See, e.g., page 17, last paragraph.

Claims 1-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Keitel, Heuser, Treschow *et al.*, or DE 2440516 taken with Kaneko *et al.* and El-Megeed *et al.*.

The claims are directed to a process of producing a starter culture of lactic acid bacteria by culturing aerobically in the presence of at least one porphyrin compound.

Keitel discloses the cultivation of lactic acid bacteria on a vegetable mash which contains chlorophyll, a porphyrin compound, and harvest the bacteria and use them to inoculate fodder. Thus harvesting a starter culture. See, e.g., col. 1, lines 42-50 and col. 2, lines 5-18 and Example II.

Heuser discloses the cultivation of lactic acid bacteria on vegetable waste which contains chlorophyll, a porphyrin compound, and harvest the bacteria and use them to inoculate silage. Thus harvesting a starter culture. See, e.g., page 1, col. 1, lines 30-45 and page 2, bridging paragraph between col. 1 and 2.

Treschow *et al.* discloses the cultivation of lactic acid bacteria on a vegetable mash such as silage which contains chlorophyll, a porphyrin compound, and harvest the bacteria and use them as an inoculant of a further fermentation. Thus harvesting a starter culture. See, e.g., col. bridging paragraph between col. 1 and 2. In addition, the reference discloses the cultivation of lactic acid bacteria on fish pulp which contains blood, a porphyrin containing compound, and harvesting of the bacteria and their use as an inoculant of a further fermentation, in this case of blood, a porphyrin containing compound. See, e.g., col. 2, lines 49-60. This food product also appears to contain harvestable lactic acid bacteria.

DE 2440516 discloses the cultivation of *Lactobacillus bavaricus* on sauerkraut, which contains chlorophyll, a porphyrin compound, and harvesting of the bacteria and use them as an inoculant of a further fermentation See, e.g., pages 14-15 and 18. Thus harvesting a starter culture. In addition, the reference discloses the cultivation of various lactic acid bacteria on sauerkraut juice, which also contains chlorophyll, a porphyrin compound, and harvesting of 356 lactic acid producing cultures, which are all usable as inoculants of a further fermentation. See, e.g., page 17, last paragraph.

The references differ from the claimed invention in that the harvested bacteria are not disclosed as being packaged or stored under refrigeration or lyophilization. Also process conditions such as the amount of porphyrin compound contained or added and extent of aeration are not disclosed.

However, El-Megeed *et al.* discloses a process of producing a starter culture of lactic acid bacteria wherein the *Lactobacillus* are refrigerated for storage or freeze dried for this purpose. Inasmuch as the bacteria have been deposited at the ATCC they have been packaged and freeze dried for storage (Sec, e.g., bridging paragraph between col. 6 and 7). In addition, at col. 11, lines 51-55 the packaging in freeze-dried form is disclosed. In addition, the starter culture is disclosed to be stored at 4°C. (See, e.g., at col. 10, lines 5-10).

In addition, Kaneko *et al.* disclose the fermentative production of diacetyl and acetoin using lactic acid bacteria which process comprises culturing the cells under aerobic conditions and adding at least one porphyrin compound in a concentration range of 0.1-500 μ M. It is disclosed that various useful compounds are produced by culturing lactic acid bacteria. However, as lactic acid accumulates and the pH of the culture medium falls, the multiplication of the bacteria and the production of useful substances is suppressed. The new culturing conditions suppress the pH drop and as a result, the bacteria grow to higher density and produce useful substances more efficiently. As a result of the products produced being non-toxic the bacteria can be recovered after the fermentation process and starter cultures can be obtained. In addition, it must be noted that the effective concentration of a porphyrin compound would depend on the nature and concentration of the porphyrin source as well as on the nature of the lactic bacteria cultured. With respect to process conditions, it is submitted that the optimization of conditions identified as result-effective variables cited in the references would have been *prima facie* obvious to a person having ordinary skill in the art, particularly since aeration control is the essence of biotechnological engineering.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the claimed invention was made to modify the process of Keitel, Heuser, Treschow *et al.* or DE 2440516 by storing and packaging the starter culture produced as suggested by the teachings of El-Megeed *et al.* and by adding specific amounts of porphyrin compounds under aeration as

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suggested by the teachings of Kaneko for closely related strains of lactic acid bacteria for the expected benefit of maintaining the viability and the important properties of commercially valuable lactic acid bacterial strains suitable as starter cultures for the production of fermented foodstuffs, for example.

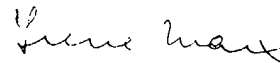
Thus, the claimed invention as a whole was clearly *prima facie* obvious, especially in the absence of evidence to the contrary.

No claim is allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Irene Marx whose telephone number is 703-308-2922. The examiner can normally be reached on M-F (6:30-3:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael G. Wityshyn can be reached on 703-308-4743. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0926.



Irene Marx
Primary Examiner
Art Unit 1651